

# MUNICIPAL STORMWATER PROGRAM DIRECTION AND PROPOSED LID FUND EXPENDITURE

Item No. 11  
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Central Coast Water Board

# Municipal Stormwater Program Shift to: *Watershed-based Approach to Program Implementation and Assessment*

- Why it is needed
- Project to support the shift

# This shift is intended to:

- Help bring about this future for urban stormwater management:

*Permittees are managing urban runoff on a catchment scale to protect and restore watershed processes, while also accruing added benefits of climate resilience and water supply security*

# Stormwater Management Over Time



**Protection of  
Public Health &  
Property**



**Peak Flow  
Management,  
Water Quality**



**Mimicking Natural  
Hydrologic  
Functions**



# Implementation of Stormwater Management



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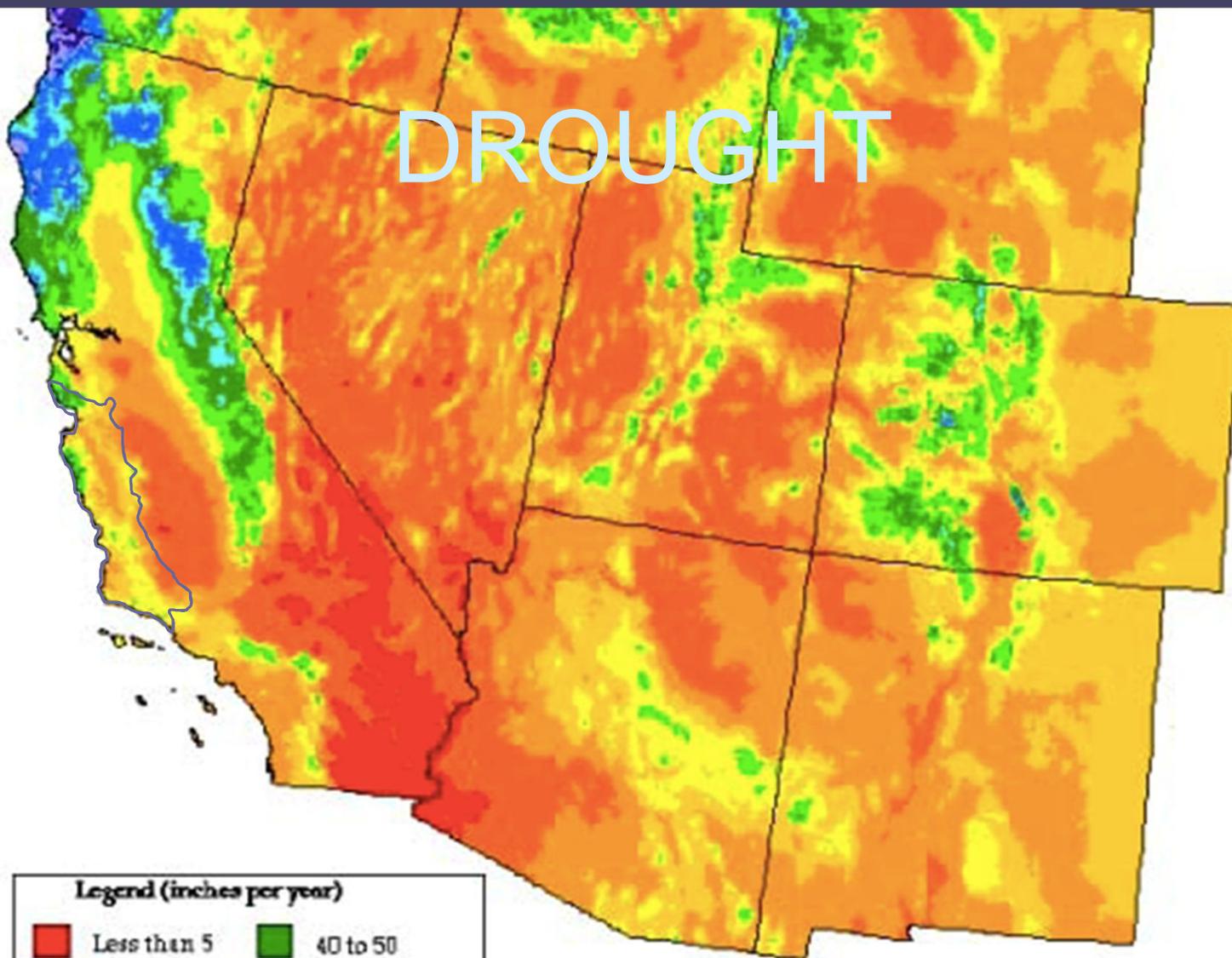
# Post-Construction Requirements

- For New and Redevelopment
- On-site Runoff Management
  - Runoff Treatment
  - Runoff Retention
  - Peak Management
- Manages Future Growth more Effectively than Built Environment



Retrofit not Required

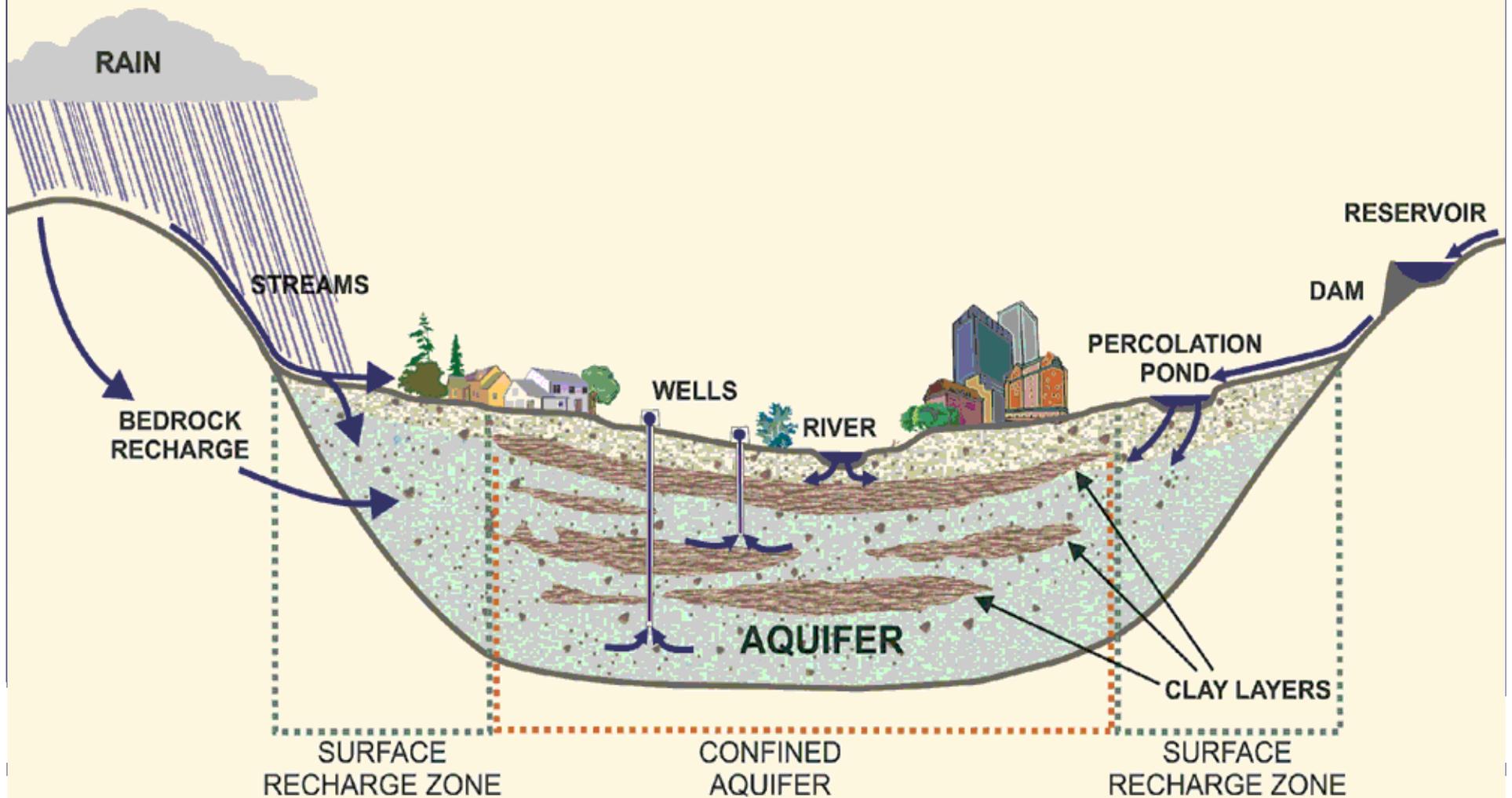
# DROUGHT



Average Annual Precipitation  
Western United States

Units: inches

# Groundwater Depletion



# Water Board Responses to Evolving Stormwater Context

- Permits
  - Phase I and Phase II MS4 Permits
  - Require Treatment, LID, Post-Construction
- Plans and Policies
  - Recycled Water Policy
  - Strategic Plan, Groundwater Program
- Grant Funding Programs
  - Props 50, 84, 1
  - Stormwater Resource Plans

# Water Board Responses to Evolving Stormwater Context

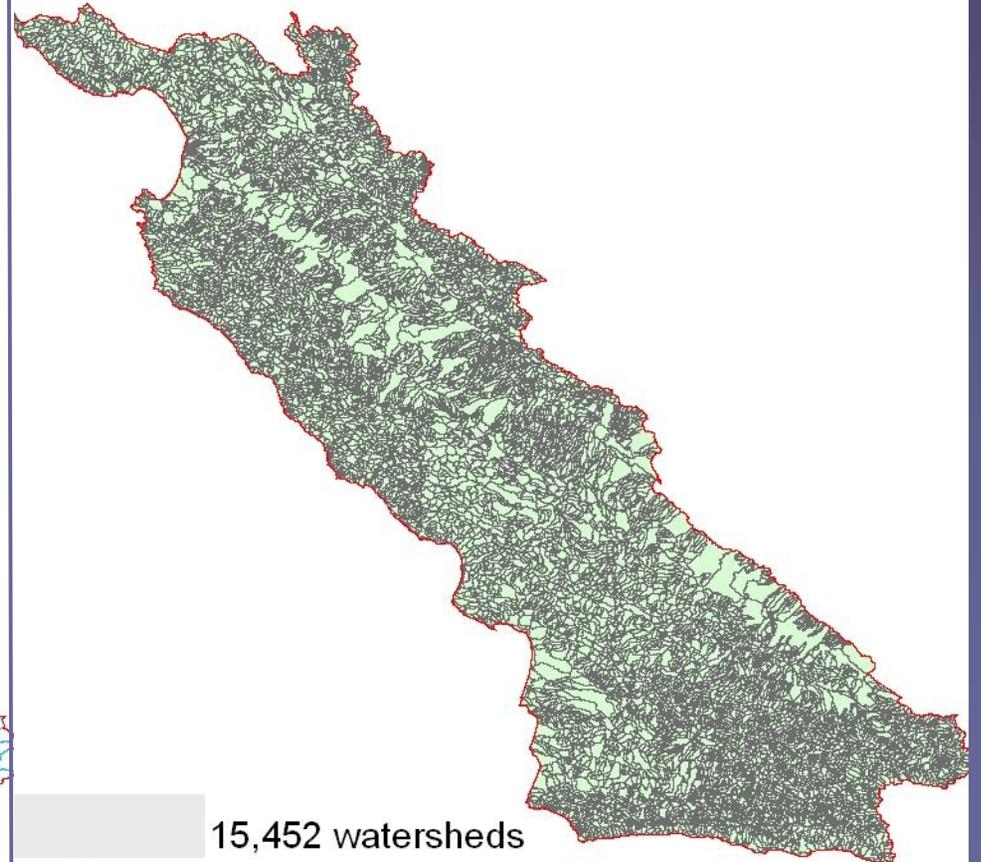
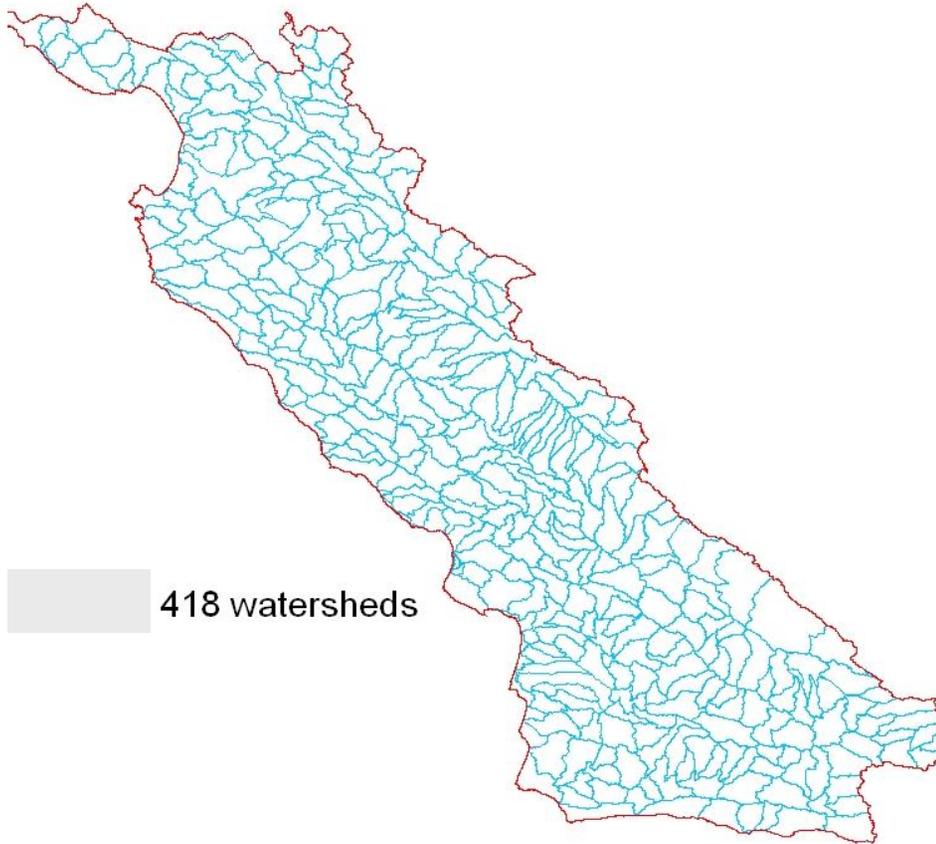
A Clear Message:

*Stormwater is a resource, best managed through watershed approaches*

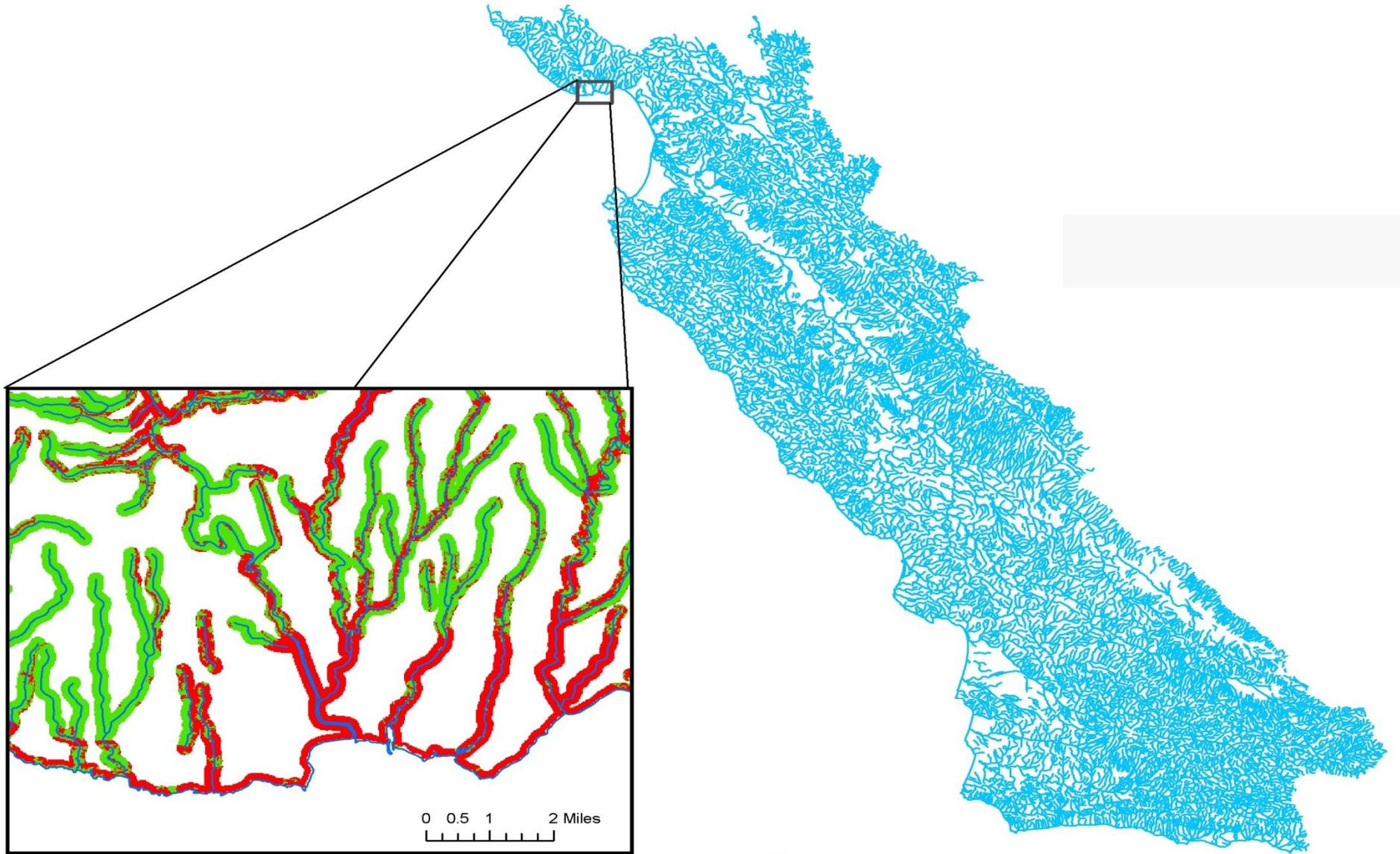
While water quality remains the unambiguous goal, recognizing and using stormwater as a resource will change how we achieve that goal

# Watersheds are Scalable, Nested Systems

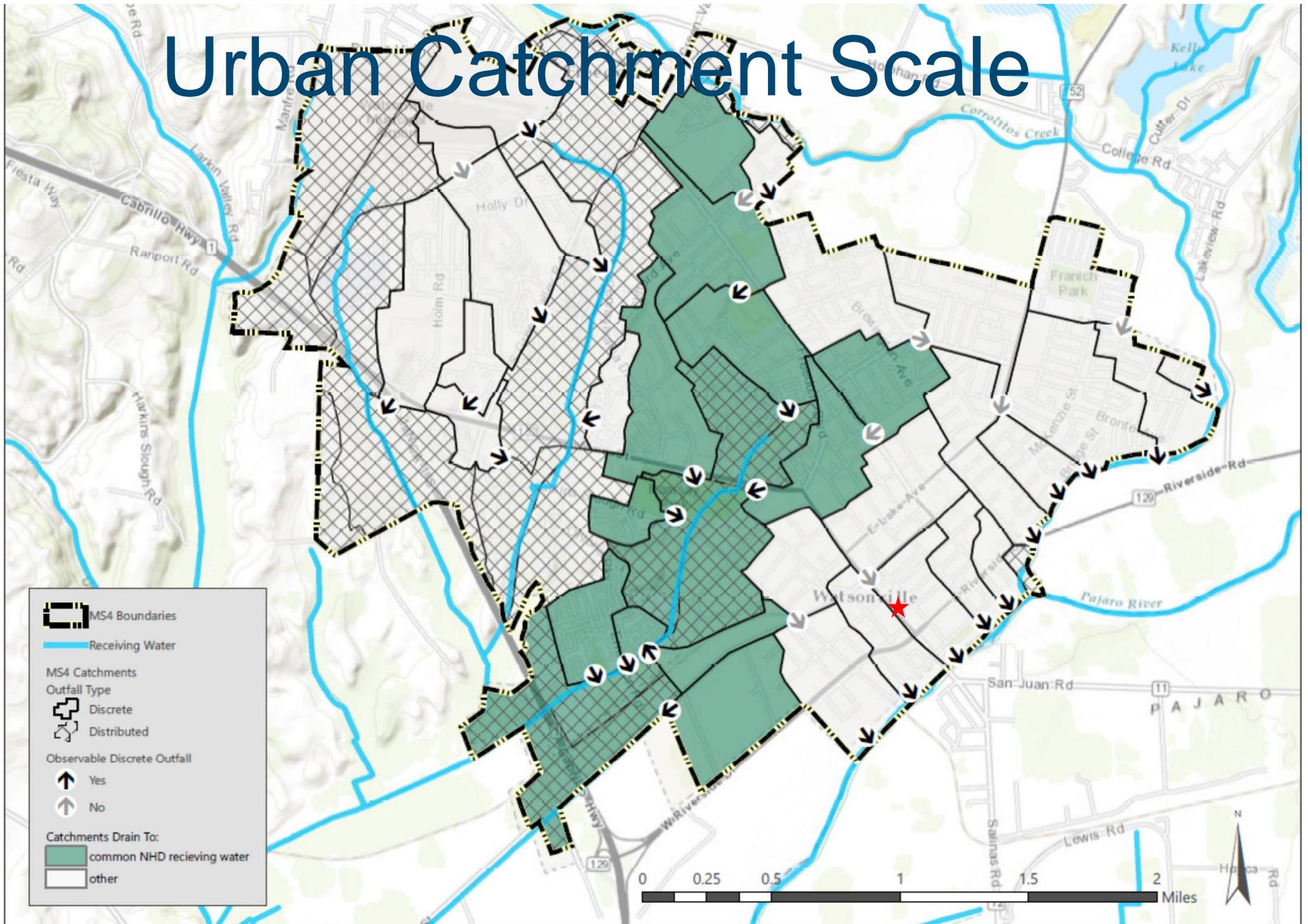
## Central Coast Watersheds



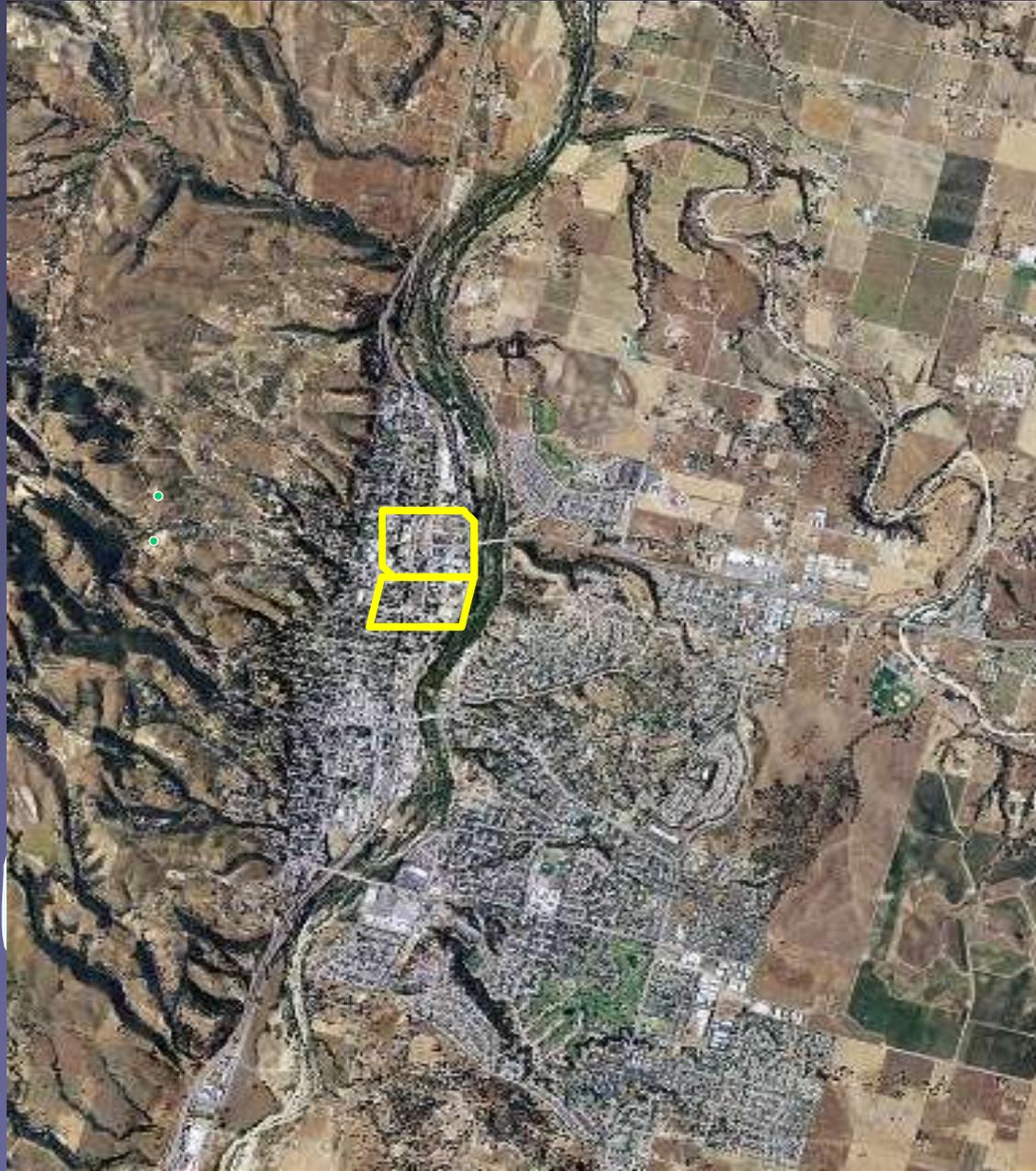
# Urban Watershed Scale



# Urban Catchment Scale



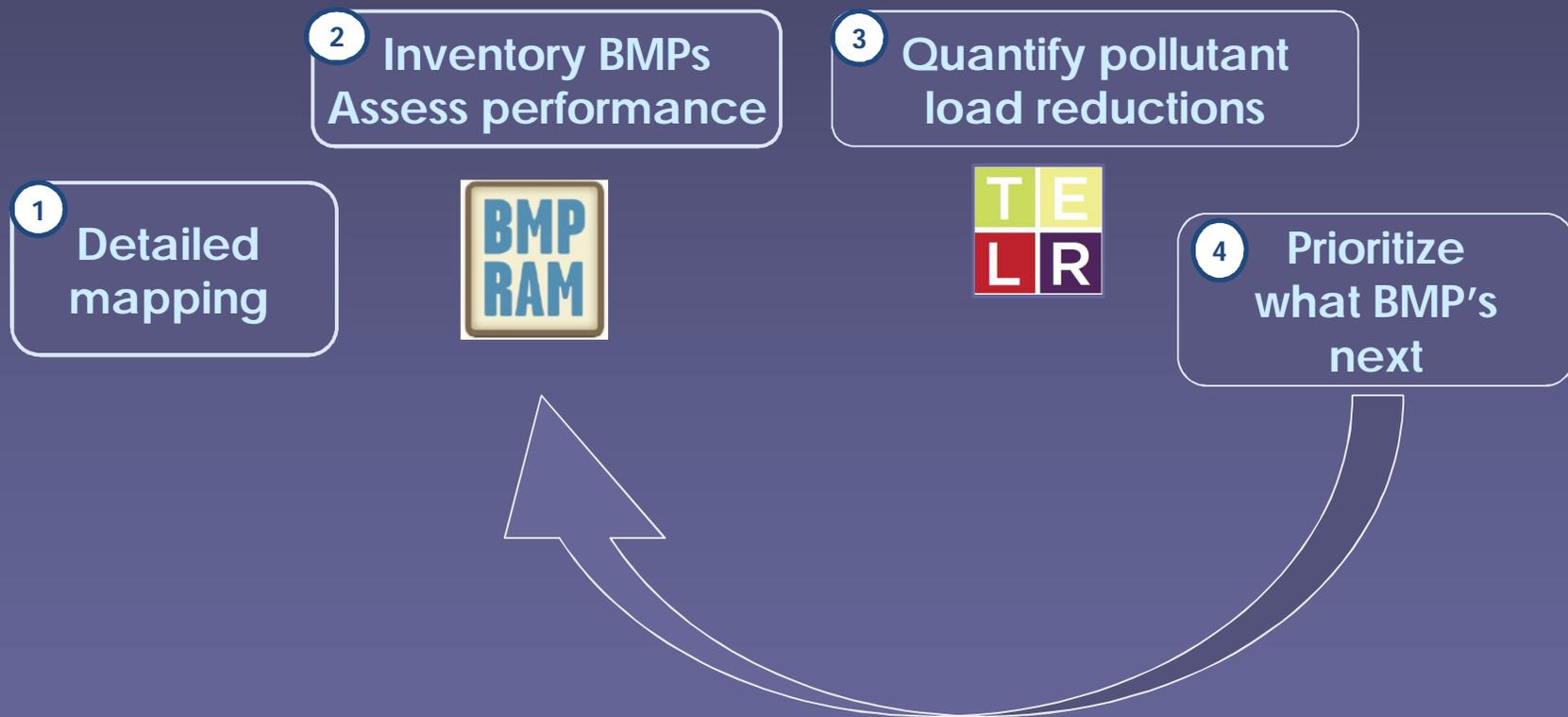
# Urban Catchment Scale



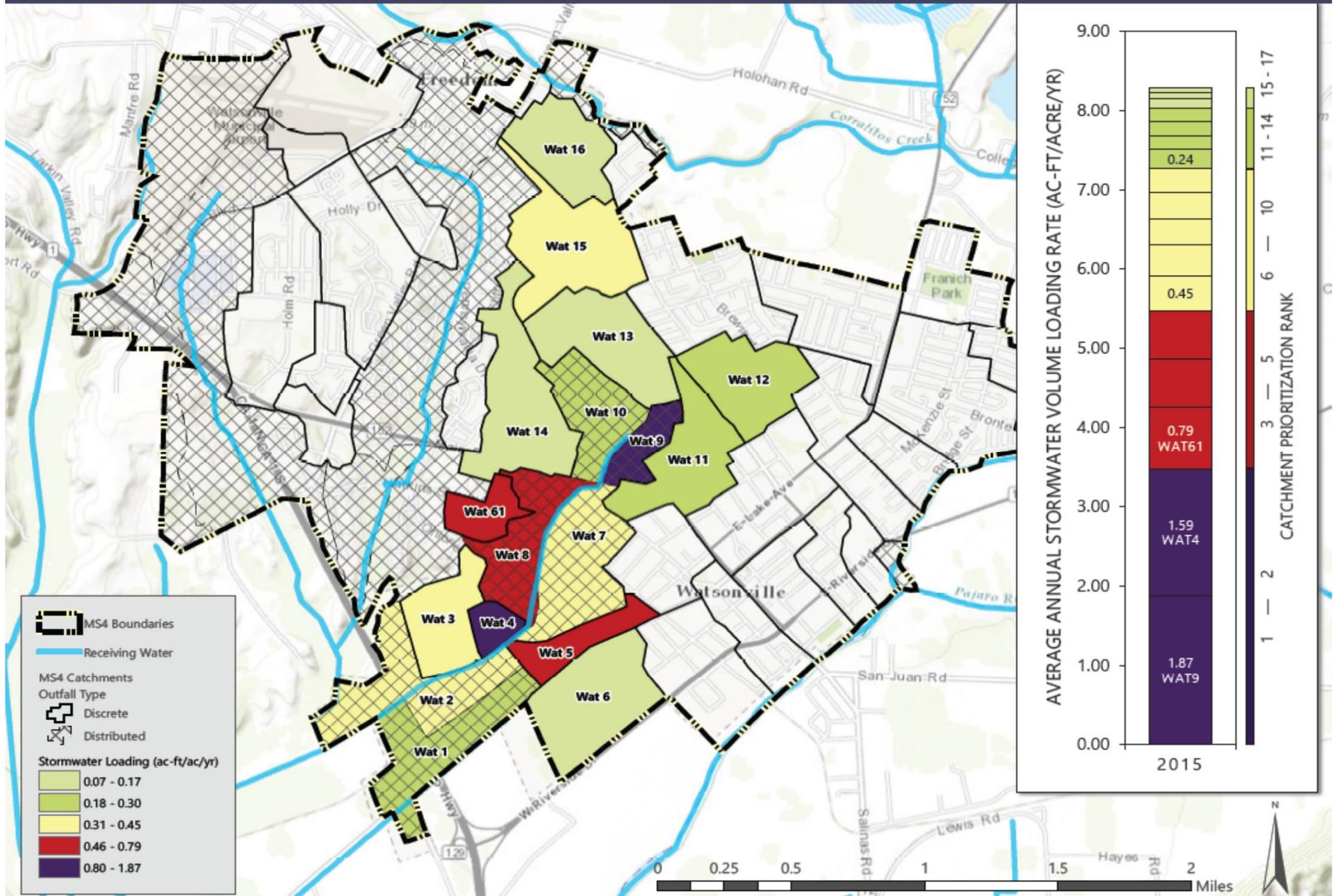
# MS4 Support Project

- Assist MS4 Permittees with shift to a *Watershed-based Approach to Program Implementation and Assessment*
- Builds from work completed in Lake Tahoe Region:
  - Urban Catchment Mapping
  - Pollutant Loading/Reduction Estimation
  - BMP Tracking, Performance and Maintenance

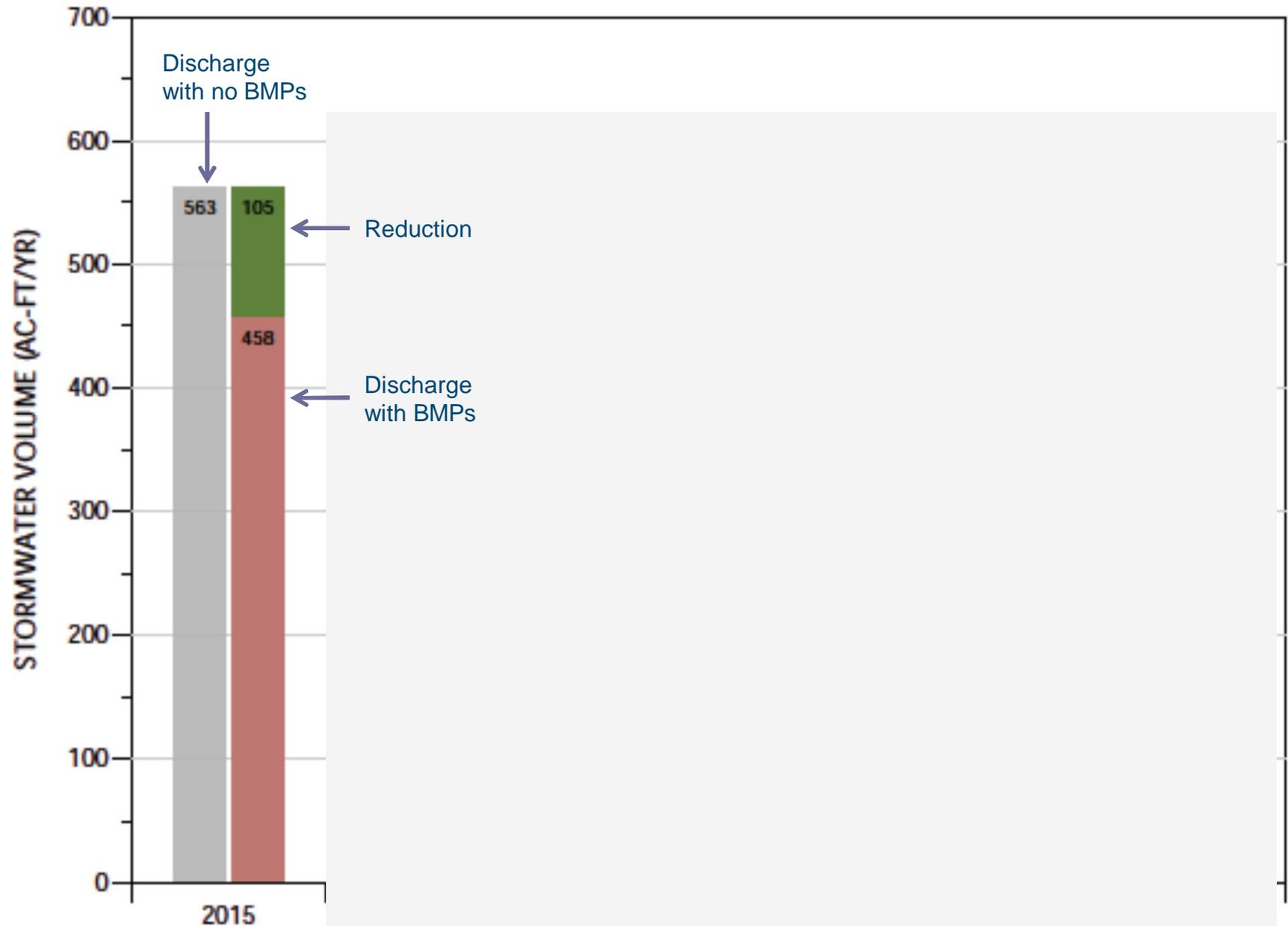
# MS4 Support Project: Develop a Process and Supporting Tools



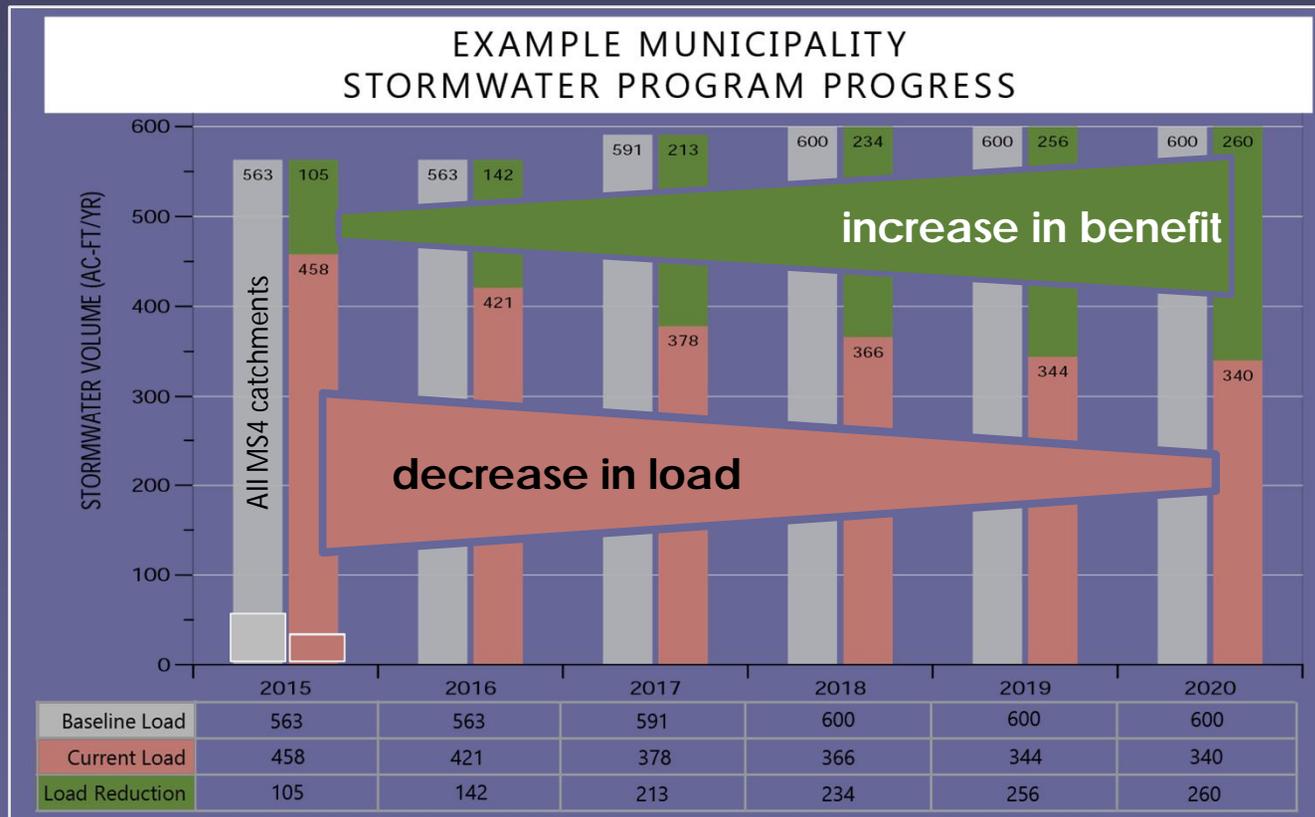
# EXAMPLE ONLY



# EXAMPLE MUNICIPALITY STORMWATER PROGRAM PROGRESS



# Track Stormwater Program Benefits Over Time



#### Baseline Load

Load **without** stormwater BMPs.

#### Current Load

Load including **all** BMPs in catchment.

#### Load Reduction

= **Baseline Load - Current Load**

# Urban Catchment-Based Program Assessment

- Foundation for:
  - ✓ Better understanding of BMP effectiveness
  - ✓ Better monitoring design
  - ✓ Better compliance demonstration



# LID Fund Expenditure

- Since 2008 – allocated \$2.2 million to contractors
- Principal contractor for the Central Coast LID Initiative is UC Davis and Project Director Dr. Darla Inglis
- \$220,000 allocated November 2014 for 2NDNATURE, LLC to complete Phase 1 of the MS4 Support Project

# Moving Forward

- Technically sound
- Success in engaging stakeholders
- Prepared to move forward with allocating LID Funds for Phase 2:
  - Refinement and finalization of:
    - Tool for Estimating Load Reduction (TELR), and
    - BMP Rapid Assessment Method (RAM)
  - Development of user guidance and training
- Cost of implementing tools in each municipality will be borne by the Permittees

# Stormwater Program Shift and MS4 Support Project:

- Assist prioritizing regulatory oversight of Permittees
- Inform future Permits revisions (Salinas in 2017; Phase II Permit in 2018)
- Point Stormwater Program to future where: *Permittees are managing urban runoff on a catchment scale to protect and restore watershed processes, while also accruing added benefits of climate resilience and water supply security*



**End**

# Understand conditions and response to our actions



## Monitor and Model

Where actions are implemented

## Assume

Reducing stormwater loading to receiving waters will improve receiving water quality

# Technical Assumptions



- 1 Volume and particulates are reliable proxies for most urban pollutants in stormwater
- 2 Constant precipitation across scenarios reduces variability and model results and isolates management signal
- 3 TELR results are consistent and comparable across catchments on a relative scale
- 4 TELR results reliably identify spatial priorities to reduce stormwater impacts on receiving waters
- 5 More accurate input data and model calibration is not necessary to inform good decisions
- 6 Iterative cost-effective tools that inform where to spend today's dollars will result in greater environmental benefits.



# Benefits of using approach

- 1 Common unit of measure sensitive to management actions
- 2 Improve communication to: regulators, funders, community, staff, managers
- 3 Applicable to any size MS4
- 4 Cost effective and flexible approach used by stormwater managers
- 5 Meet MS4 permit requirements and support TMDL objectives



# Calibration of TELR to measured data



- 1 Calibration to measured data does not always verify accurate model results across time and space
- 2 Calibrated TELR catchment stormwater runoff to other models (SWMM, HSPF, etc) without BMPs.
- 3 We included the most critical parameters driving the signal of BMP effectiveness in an urban catchment
- 4 Model algorithms are internally accurate on a relative scale, resulting in consistent predictions of high and low catchment loading
- 5 We can monitor to test and improve the algorithms which is less complicated than calibrating model outputs

